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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,308	01/08/2002	Takefumi Ishikura	011780	8635
23850	7590	02/24/2004	EXAMINER	
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006			WILLE, DOUGLAS A	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 02/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/019,308	Applicant(s) ISHIKURA ET AL.	
	Examiner Douglas A Wille	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2002.  
 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-17 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☒ All b) ☐ Some \* c) ☐ None of:  
 1. ☒ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>0402</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 4, 8, 9, 15, 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 4 shows a density as a ratio. This has no meaning.
4. Claim 8 has "...a crystal positioned at the growth surface." This is not understood, unless it is a statement that the crystal is where it is positioned i.e. the obvious meaning.
5. Claim 9 has "...emits...radiation according to cathodoluminescence spectrum...". What does this mean? Does this mean that catholuminescence spectrum is the physical mechanism for emission? If so it is nonsense.
6. Claim 10 has "...the ration of free electron...according to cathodoluminescence spectrum. What does this mean?
7. Claim 15 shows a density as a ratio. This has no meaning.
8. Claim 16 refers to the "...concentration ...in quantification based on...". The concentration has nothing to do with how it is measured. If this is intended to be a method limitation, it is noted that such a limitation would carry no weight in a claim drawn to a device.
9. Claim 17 has the same problem as claim 10.

### ***Double Patenting***

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or

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improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 1 – 3, 5, 8 – 11, 13, 14 and 17 are rejected under the judicially created doctrine of double patenting over claims 1, 4, 5, 8 – 10 and 58 of U. S. Patent No. 6,433,474 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows:

With respect to claim 1, see patent claim 1.

With respect to claim 2, see patent claim 1.

With respect to claim 3, see patent claim 4.

With respect to claim 5, see patent claim 8.

With respect to claim 8, see patent claim 1.

With respect to claim 9, see patent claim 1.

With respect to claim 10, see patent claim 1.

With respect to claim 13, see patent claim 10.

With respect to claim 14, see patent claim 58.

With respect to claim 17, see patent claim 5.

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Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

### DETAILED ACTION

#### *Claim Rejections - 35 USC § 102*

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1, 2, 5, 6, 8 – 13 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshihiro et al.

14. With respect to claim 1, Yoshihiro et al. show the CVD formation of diamond on a diamond substrate (see constitution) and the radiation is free exciton dominant (see Figure 9).

15. With respect to claim 2, the main peak is more than twice the next peak.

16. With respect to claim 5, the CVD layer is monocrystal.

17. With respect to claim 6, the CVD layer is homoepitaxial.

18. With respect to claim 8, the CVD layer is on the base crystal.

19. With respect to claim 9, the emission is free exciton radiation.

20. With respect to claims 10 and 17, the characteristics of the spectrum at the lower temperature are inherent in the spectrum shown.

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21. With respect to claim 11, the CVD layer is B doped (see paragraph [0055]) and is thus conductive.

22. With respect to claim 12, the CVD layer is formed using H<sub>2</sub> (see paragraph [0055]) which provides dangling bond termination as is known in the art.

23. With respect to claim 13, the CVD layer is B doped (see paragraph [1155]).

***Claim Rejections - 35 USC § 103***

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. Claims 3, 4 and 14 - 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshihiro et al in view of Akio et al.

26. With respect to claims 3, 4, 14 and 16, Yoshihiro et al. do not show the B doping level but Akio et al. show (see constitution) that for diamond epi the B level should be 1 ppm or greater and the N level should be 10 ppm or less to increase the blue emission. It would be obvious to use these levels in the Yoshihiro et al. device for the benefit shown.

27. With respect to claim 15, it would be obvious to use any level of B in the plasma to reproduce the desired level in the deposited film.

28. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshihiro et al in view of Linares et al. et al.

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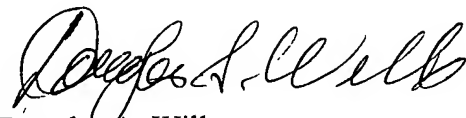
29. Yoshihiro et al. show the diamond layer as monocrystal but Linares et al. show that CVD can produce monocrystal layers of polycrystal layers (column 1, line 60) and it would be obvious to select either as a design choice.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas A Wille whose telephone number is (571) 272-1721. The examiner can normally be reached on M-F (6:15-2:45).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Douglas A. Wille  
Primary Examiner